

What is claimed is

~~Claims~~

1. Zirconium-based alloy also containing, by weight, in addition to unavoidable impurities, from 0.02 to 1% of iron, from 0.8% to 2.3% of niobium, less than 2000 ppm of tin, less than 2000 ppm of oxygen, less than 100 ppm of carbon, from 5 to 35 ppm of sulphur and less than 0.25% in total of chromium and/or vanadium, the ratio of the niobium content less 0.5% to the iron content, optionally supplemented by the chromium and/or vanadium content, being lower than 3.
2. Alloy according to claim 1, also containing from 0.8% to 1.1% by weight of niobium, from 0.3% to 0.35% by weight of iron, from 0.15% to 0.20% by weight of tin, from 0.01 to 0.1% by weight of chromium and/or vanadium, from 1000 to 1600 ppm of oxygen, from 5 to 35 ppm of sulphur and less than 100 ppm of carbon.
3. Alloy according to claim 1, containing 1000 - 1600 ppm of oxygen.
4. Cladding tube made from an alloy according to claim 1, 2 or 3, in the recrystallised state.
5. Flat product made from an alloy according to claim 1, 2 or 3, in the recrystallised state.
6. Application of the alloy according to any one of claims 1, 2 and 3, to the production of components of nuclear reactors operating with pressurised water that initially contains less than 5 ppm of lithium.
7. Method for making tubes that are to constitute all or the external portion of a nuclear fuel rod cladding or a

guide tube for a nuclear fuel assembly, characterised in that:

a bar is produced from a zirconium-based alloy also containing, by weight, apart from unavoidable impurities, from 0.02 to 1% of iron, from 0.8% to 2.3% of niobium, less than 2000 ppm of tin, less than 2000 ppm of oxygen, less than 100 ppm of carbon, from 5 to 35 ppm of sulphur and less than 0.25% in total of chromium and/or vanadium, the ratio of the niobium content less 0.5% to the iron content, optionally supplemented by the chromium and/or vanadium content, being lower than 3;

the bar is water-quenched after heating at from 1000°C to 1200°C;

a blank is extruded after heating at from 600°C to 800°C; the blank is cold-rolled in at least two passes to obtain a tube, with intermediate thermal treatments at from 560°C to 620°C; and

a final thermal treatment is carried out at from 560°C to 620°C, all of the thermal treatments being carried out in an inert atmosphere or under vacuum.

